REMARKS

In paragraph 2 of the Office Action, the Examiner stated that no copy of the Canadian Office Action had been provided with the Information Disclosure Statement filed June 30, 2009. In the PTO image file of the present application, the Canadian Office Action was entered as of June 30, 2009 under the heading :"Transmittal Letter 7 pages". In paragraph 3, the Examiner stated that there was no concise explanation of the relevance of the Korean Office Action, Taiwan Office Action or CN 1372705. A supplemental Information Disclosure Statement is being filed to provide the requested information.

Claims 1, 3-6, 8-12, 14, 16 and 17 were rejected under 35 U.S.C.§103(a) as being unpatentable over Nagata et al. (Nagata) in view of Inda et al. (Inda).

Reconsideration is requested.

Claim 1 points out a solid electrolyte and a positive electrode that exist in a mixed state in the interface between the solid electrolyte and the positive electrode and/or the solid electrolyte and the negative electrode exist in a mixed state in the interface between the solid electrolyte and the negative electrode.

Nagata was applied as teaching that the solid electrolyte mixture is used because of good adhesion to the electrodes (col. 5, lines 42-46). "Good adhesion" as disclosed by Nagata and "excellent contact the interface" as used in [0062] of the present specification are entirely different concepts as to the degree of contact in the interface between the electrode and the solid electrolyte.

Nagata forms a mixture and dries the mixture to make a single electrolyte sheet (col. 7, lines 16-19) and the solid electrolyte sheet after drying is pressed to adhewre to the electrode (col. 1, line 67-col. 2, line 2).

By this type of adhesion, the interface is not brought to a mixed state but is brought only to a state wherein the electrolyte material meshes with the electrode material ands when viewed under a microscope, it can be seen that there are spots where the two materials do not contact one another (Fig. 3). For this reason, Nagata never provides or suggests "excellent contact in the interface" as required by the present invention.

The present invention utilizes a solvent coating in the undried state where a fluid mixture contacts the interface before drying and thus each of the electrolyte And the electrode material flow and are scattered to bring about a mixed state as shown in Fig. 4 and as a result, the surface area of the interface increases and there is no spot where the two materials are not in contact with one another.

In Comparative Example 5 of the present application, like Nagata, a solid electrolyte is separately made and after drying, the separately made electrolyte is pressed onto the electrode so that it adheres to the electrode. In contrast to Comparative Example 5, Example 5 of the present invention (the same battery as in Example 4) the electrolyte material is coated immediately after the electrode material is coated and then the two materials are dried to bring about the mixed state.

Comparing Comparative Example 5 with Example 5 in the charge-discharge density test at $3mA/cm^2$, Example 5 has an initial capacity that is 1.54 times as large as Comparative Example 5 and the capacity after 20 cycles is 1.84 times as large as Comparative Example 5.

This improvement has been achieved because the degree of contact in the battery interface of the battery of the present invention has been significantly improved as compared to the battery of Comparative Example 5 which corresponds to the Nagata battery and as a result the resistance in the interface of the battery of the present invention has decreased.

The result of the charge-discharge density test described above is apparently caused by a difference in the interface and thus it is apparent that the interface in the Nagata battery is different from the "mixed state" of the interface of the battery of the present invention and that the degree of contact in the interface of the two materials in Nagatas's battery is by far inferior to the battery of the present invention.

For these reasons, Nagata fails to disclose suggest the excellent contact in the interface which is achieved by the present invention

Attached hereto are Fig. 3 and Fig. 4 which are drawn to the same scale and they schematically show the state of the contact between the electrolyte and the electrode of the present invention (Fig. 3 and Nagata (Fig.4).

The Inda patent discloses an invention relating to a gel polymer electrolyte including an electrolytic solution. Since in a battery using this electrolyte, the electrolytic solution exists in the interface between the electrolyte and the electrode, there is no problem of contact in the interface. Inda does not disclose or suggest the concept of bringing about the mixed state in the interface between the electrolyte and the electrode. For these reasons, neither Nagata nor Inda, when considered alone or in combination, disclose or suggest the concept of bringing about the mixed state. For these reason, it is requested that this r4ejction be withdrawn.

By making the electrolyte layer thin and also providing a mixed interface between the electrode and the electrolyte as shown in Fig. 2, the resistance to lithium ion conduction can be reduced and a lithium ion secondary battery having high capacity and a large output with good charge-discharge cycle properties is obtained. This concept is not made obvious by Nagata or by Inda .

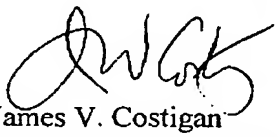
In paragraph7 of the Office Action, claim 13 was rejected under 35 U.S.C.§103(a) as being unpatentable over Nagata et al. (Nagata) in view of Inda et al. (Inda) further in view of Munshi.

Reconsideration is requested.

The Nigata and Inda patents have been distinguished from the claims above. Munshi discloses an electrolyte that is made of a polymer, a salt and an ion conducting material and the lithium ion conductive inorganic substance. There is no suggestion of coating the electrolyte onto an electrode which results in a different structure from the "flexible, dry, non-tacky" solid electrolyte of Munshi. Claim 13 defines a different and unobvious structure from that taught by the cited references in that claim 13 is dependent on claim 8 which is dependent on claim 1. Therefore all of the arguments advanced above with regard to the patentability of claim 1 are also applicable to claim 13. For these reasons, it is requested that ground of rejection be withdrawn..

An early and favorable action is earnestly solicited.

Respectfully Submitted,



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